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on August 31, 2004

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In Re Application Of: Eichrodt, et al

Group No.: 2631

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For: System and Method for Implementing a Delta-Sigma Modulator Integrity Supervisor

The following is a list of documents enclosed:

Return Postcard
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into a continuous time analog signal for transmission to the CP 20 via one or more transmission lines 30 (one shown). One or more analog signal representations of digital data streams supplied by one or more data sources supplied by the DSL host 41, may be converted in the CO-AFE 45 and further amplified and filtered in the CO-line driver 47 and a line transformer in order to provide a nominal analog signal to a customer premise 20 (see FIGS. 1 and 2).

In the receive direction, the hybrid amplifier 58 may be required to boost the analog signal strength of the received analog signal from the CP 20 (not shown). The received and amplified analog signal from the hybrid amplifier 58 may be forwarded to the ADC 56 which may be configured to convert the received analog signal into one or more digital signals, which may then be transmitted to the CO-DSP 43. Finally, the digital information may be communicated to the DSL host 41, which may further distribute the received data transmissions to one or more specified data sources (not shown).

In communication systems designed to transmit data over metallic transmission lines, the line driver (*e.g.*, the CO-line driver 47) is an amplifier which delivers the energy required to transmit the intended signal to the line via back-matching resistors 59. Often impedance and voltage scaling is performed by coupling the output from the line driver 47 to the transmission line 30 via a transformer 57.

The back-matching resistors 59 serve two purposes. First, the back-matching resistors 59 match the impedance at the end of the transmission line. In order to provide a sufficient return loss, a set of resistors having a resistance approximately equal to the line's characteristic impedance, scaled by the turns-ratio of the line transformer, should terminate the line. Second, the back-matching resistors 59 permit the line driver 47 to simultaneously receive signals generated from a remote transmitter coupled to the transmission line 30 at the same time the line driver 47 is transmitting. The line driver 47 alone cannot terminate the transmission line 30 because the line driver 47 presents a low impedance to the remotely transmitted signal. The remotely transmitted signal may be recovered by subtracting from the voltage on the transmission line 30 the voltage introduced on the transmission line by the local transceiver.